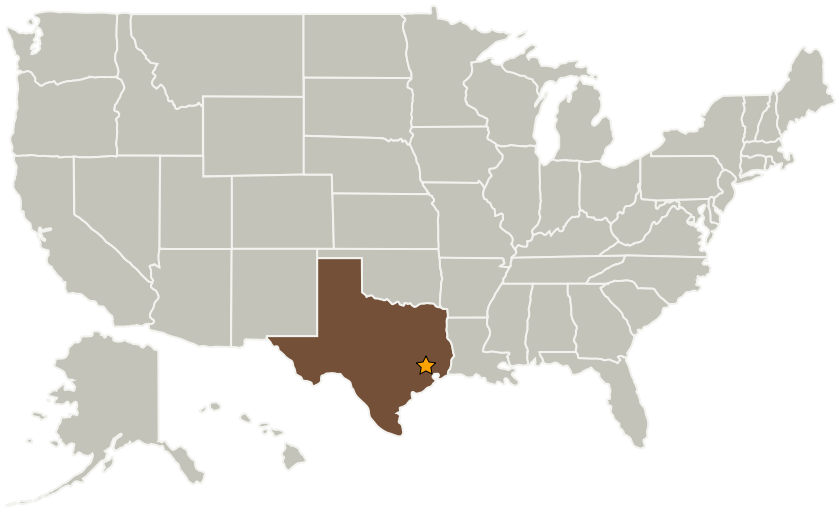
Advanced 3D Human Simulation Components with Thermal/Haptic Feedback and Tissue Deformation, Phase I

Completed Technology Project (2006 - 2007)

Project Introduction

In integrating the following three significant components for its research/research and development (R/R&D) effort, the power of this candidate Phase I project will be demonstrated through the Collaborative Virtual Environment Simulation Tool (CVEST): 1. Software Application Development Toolkit 2. Physiological Hardware Interface 3. Technology Integration Manager The multi-faceted CVEST development environment operates as a plug-and-play interface to various software and hardware products specializing in virtual reality-based simulation development. The final Phase I demonstration will feature the muscular mass/tissue deformation within a digital virtual human interface (DVH) to show performance data (physiological, biomechanical, etc). This STTR Phase I candidate project will concentrate on some new physiological hardware/haptic devices to produce tactile feedback to the user. These range from gross or large object reporting to more fine-grain/granular tactile sensing to thermal sensing devices. In addition, a COTS-based Global Position System (GPS) will be analyzed as wireless tracking source for the user. For NASA and commercial domains, this Phase I simulation facility, with its physiological/biomechanical functionality, could be implemented in software and integrated to enable realistic simulations of the forces exerted on and by users (astronauts, divers, etc.) as they work in various environments.

Primary U.S. Work Locations and Key Partners



Advanced 3D Human Simulation Components with Thermal/Haptic Feedback and Tissue Deformation, Phase I

Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Organizational Responsibility	1
Project Management	2
Technology Areas	2

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Advanced 3D Human Simulation Components with Thermal/Haptic Feedback and Tissue Deformation, Phase I

Completed Technology Project (2006 - 2007)

Organizations Performing Work	Role	Type	Location
★Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
HPN Software Consultant, Inc.	Supporting Organization	Industry	Houston, Texas

Primary U.S. Work Locations
Texas

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.2 Extravehicular Activity Systems
    - TX06.2.3 Informatics and Decision Support Systems